UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/645,988	08/22/2003	Edwin Lyle Hudson	eLCOS0303	8638

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EXAMINER
LUI, DONNA V

ART UNIT	PAPER NUMBER
2675	

DATE MAILED: 01/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
	10/645,988	HUDSON, EDWIN LYLE
Office Action Summary	Examiner	Art Unit	
	Donna V. Lui	2675	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE **3** MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *22 Aug 2003*.

2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-26* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-26* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☒ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Double Patenting

1.   The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., In re Berg, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); In re Goodman, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); In re Longi, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); In re Van Ornum, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); In re Vogel, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and In re Thorington, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2.   Claims 1-26 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of copending Application No. 10/682,498. Although the conflicting claims are not identical, they are not patentably distinct from each other because application 10/645,988 is broader than application 10/682,498. Application 10/682,498 specifically states the voltage database as a color-specific-thermal-effect voltage database to generate reference voltages that account for a thermal-effect color balance.

This is a <u>provisional</u> obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim 1 of this application 10/645,988	Claim 1 of application 10/682,498
A thermal control and management system for a microdisplay comprising	A thermal control and management system for a microdisplay comprising
(a) a temperature sensor system for measuring and generating a temperature measurement signal; and	(a) a temperature sensor system for measuring and generating a temperature measurement signal; and
(b) a data processing means having a voltage database for receiving and processing said temperature measurement signal by employing said voltage database to generate a temperature-dependent reference voltages for operating said microdisplay system most suitable for said temperature measurement signal	(b) a data processing means having a color-specific-thermal-effect voltage database for receiving and processing said temperature measurement signal by employing said color-specific thermal-effect voltage database to generate a color-specific-temperature-dependent reference voltages for operating said microdisplay system by accounting for a thermal-effect of color balance whereby said color-specific temperature dependent reference voltages are most suitable for said temperature measurement signal

3.   Claims 1-27 of application 10/682,498 contain every element of claims 1-26 of the

instant application and as such anticipates claims 1-26 of the instant application.

"A later patent claim is not patentable distinct from an earlier patent claim if the later claim is

obvious over, or **anticipated by**, the earlier claim. In re Longi, 759 F.2d at 896, 225 USPQ at

651 (affirming a holding of obviousness-type double patenting because the claims at issue were

obvious over claims in four prior art patents); In re Berg, 140 F.3d at 1437, 46 USPQ2d at 1233

(Fed. Cir. 1998) (affirming a holding of obviousness-type double patenting where a patent

application claim to a genus is anticipated by a patent claim to a species within that genus)." ELI

LILLY AND COMPANY v BARR LABORATORIED, INC., United States Court of Appeals

for the Federal Circuit, ON PETITION FOR REHEARING EN BANC (DECIDED: May 30,

2001).

Specification

1.   The disclosure is objected to because of the following informalities:

a.   References are cited within the specification and cannot be found due to insufficient information. Please use PTO-1449 to list any references.

Page 1, line 26: Kurogane et al., no cited document number

Page 1, line 31: US Patent RE 37056, Wortel et al., not a valid document number

b.   Co-inventor is mentioned on page 6, please submit a statement of fact for correction to include or exclude as co-inventor.

c.   Page 3, lines 21 and 24: Error in referencing to figures because figure 1D does not exist.

Appropriate correction is required.

Claim Objections

2.   Claims 6-7, 13, 19 and 25 are objected to because of the following informalities: spelling errors.

Claims 6-7, line 4: The word sensor is misspelled.

Claim 13, line 3: The word analog is misspelled.

Claim 19, line 2: The word sensor is misspelled.

Claim 25, line 3: The word sensor is misspelled.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3.   **Claim 9** is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing

to particularly point out and distinctly claim the subject matter which applicant regards as the

invention, namely "a reasonable range".

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4.   **Claims 1, 3, 4, 9, 20, 22 and 23** are rejected under 35 U.S.C. 102(b) as being anticipated

by Lippmannn et al. (Patent No.: 5,936,603).

With respect to **Claim 1**, Lippmann discloses a thermal control and management system

for a mircodisplay *(See figure 1, 18)*. Lippmann teaches a thermal control and management

system *(See figure 4)* comprising a temperature sensor system *(94, column 4, lines 57-60)* for

measuring and generating a temperature measurement signal *(input into "A" of element 92)* and

a data processing means *(microprocessor, 140 and figure 4)* having a voltage database for

receiving and processing the temperature measurement signal by employing a voltage database

(memory comprising: 136: column 5,lines 47-49; 130: column 5, lines 39-42; and 132: column

5, *lines 42-44)* to generate a temperature-dependent reference voltage for operating the

microdisplay system most suitable for a temperature measurement signal.

With respect to **Claim 14**, claim 14 differs from claim 1 only in that claim 1 recites the

limitation "a temperature sensor system for measuring and generating a temperature

measurement signal" whereas claim 14 does not. Thus claim 14 is analyzed as previously

discussed with respect to claim 1.

With respect to **Claim 20**, claim 20 differs from claim 1 only in that claim 1 is a system

and claim 20 is a method. Thus the method claim 20 is analyzed as previously discussed with

respect to claim 1.

With respect to **Claims 3 and 22**, Lippmannn teaches the data processing means to

include a control register *(figure 4, comparator 92)* for loading and reading the temperature

measurement signal.

With respect to **Claims 4 and 23**, Lippmann teaches data processing means to include a

digital-to-analog converter output circuits for outputting the temperature dependent reference

voltages *(figure 4, 88; column 4, lines 28-29 and lines 49-55).*

With respect to **Claim 9**, Lippmann teaches the data processing means further including a

means for determining if the temperature measurement signal is within a reasonable range *(DAC,*

column 4, lines 49-55; the reasonable range was interpreted as the analog command voltage).

Please note the above 35 USC 112 2nd paragraph rejection.

5.   **Claims 1-2, 5, 6, 14-16, 18-21, and 24-26** are rejected under 35 U.S.C. 102(b) as being

anticipated by Yasue (Patent No.: 6,806,871).

With respect to **Claim 1**, Yasue discloses a thermal control and management system for a

mircodisplay *(figure 1, 10)*. Yasue teaches a thermal control and management system comprising

a temperature sensor system *(figure 2, 120; column 10, lines 53-56)* for measuring and

generating a temperature measurement signal and a data processing means *(adder, 136)* having a

voltage database *(132: lines 54-55 and 134: lines 57-58)* for receiving and processing the

temperature measurement signal by employing a voltage database to generate a temperature-

dependent reference voltage for operating the microdisplay system most suitable for a

temperature measurement signal.

With respect to **Claim 14**, claim 14 differs from claim 1 only in that claim 1 recites the

limitation "a temperature sensor system for measuring and generating a temperature

measurement signal" whereas claim 14 does not. Thus claim 14 is analyzed as previously

discussed with respect to claim 1.

With respect to **Claim 20**, claim 20 differs from claim 1 only in that claim 1 is a system and claim 20 is a method. Thus, the method of claim 20 is analyzed as previously discussed with respect to claim 1.

With respect to **Claims 2, 15 and 21,** Yasue teaches the data processing means generating a temperature-dependent black state voltage and a white state voltage as the temperature-dependent reference voltage most suitable for said temperature measurement signal *(the black state voltage corresponds to the temperature gradient when the screen is black or turned off and the white state voltage corresponds to the temperature gradient when the screen is white or turned on; column 5, lines 36-47).*

With respect to **Claim 16**, Yasue teaches the data processing means to include a control register *(figure 2, temperature setting register 128; column 7, lines 19-22)* for loading and reading the temperature measurement signal.

With respect to **Claims 5, 18 and 24**, Yasue teaches data processing means to include an interpolation means for interpolating between two data in the database for generating temperature dependent reference voltages *(column 8, lines 26-32).*

With respect to **Claim 6, 19 and 25**, Yasue teaches a temperature sensor system to include a temperature sensor embedded in the microdisplay *(column 10, lines 53-56).*

With respect to **Claim 26**, Yasue teaches a step of employing the voltage database for

generating temperature-dependent reference voltages further comprising a step of applying a

curve-fitting algorithm using data in the database for generating temperature dependent reference

voltages *(column 8, lines 26-32).*

Claim Rejections - 35 USC § 103

6.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

7.   **Claim 7** is rejected under 35 U.S.C. 103(a) as being unpatentable over Lippmann in view

of the 10th Mediterranean Electrotechnical Conference, MeleCon 2000, Vol. II (PTAT Sensors

Based on SJFETs, herein after referred to as "MEC").

With respect to **Claim 7**, Lippmann teaches the use of a temperature sensor system

comprising an NPN silicon transistor having its collector connected through a resistor to VDD

and its emitter connected through a resistor to ground and the base is connected through divider

resistors and VDD *(column 4, lines 57-63).* Lippmann does not teach the temperature sensor

system further comprising a PTAT temperature sensor system. MEC teaches the use of PTAT

sensors. It would have been obvious for a person of ordinary skill in the art at the time the

invention was made to substitute the PTAT sensor, as taught by MEC into the thermal control

management system of Lippmann, for the purpose of obtaining good sensitivity, stability and

linearity of sensor response in the measured temperature range of 20-90 degrees Celsius *(page 1,*

2nd column, 2nd paragraph).

8.   **Claim 8** is rejected under 35 U.S.C. 103(a) as being unpatentable over Lippmann in view

of Applicant Admitted Prior Art (herein after referred to as "AAPA").

With respect to **Claim 8**, Lippmann does not teach the data processing means to further

include an additional cooling activating system to activate additional cooling for the

microdisplay according to the temperature measurement signal. The AAPA teaches the use of a

thermostat for activating a fan in a microdisplay *(page 1, [0009], lines 6-10)*. It would have been

obvious for a person of ordinary skill in the art at the time the invention was made to use a fan

activated by a temperature sensor, as taught by the AAPA, to the thermal control management

system of Lippmann for the purpose of controlling the operational temperature of a microdisplay

(page 1, [0009], lines 6-7).

9.   **Claim 10** is rejected under 35 U.S.C. 103(a) as being unpatentable over Lippmann in

view of Levy et al. (Patent No.: 3,936,817).

With respect to **Claim 10**, Lippmann does not mention the use of data processing means

to further include a means for receiving and processing the temperature measurement signal to

function as a part of a Peltier thermal control loop. Levy teaches the use of a Peltier thermal

control loop *(column 3, lines 29-37; A Peltier thermal control loop is equivalent to the*

thermoelectric effects/element, column 3, lines 43-45). It would have been obvious for a person

of ordinary skill in the art at the time the invention was made to use the Peltier thermal control

loop, as taught by Levy, to the thermal control management system of Lippmann for the purpose

of functioning as a heat absorbing or generating system in order to conduct heat flow to or away

from a heat sink *(column 5, lines 5-18).*

10.   **Claims 11 and 12** are rejected under 35 U.S.C. 103(a) as being unpatentable over

Lippmann in view of Wood et al. (Patent No.: 5,926,162).

With respect to **Claim 11**, Lippmann does not mention a data processing means

generating temperature-dependent reference voltages most suitable for a temperature

measurement signal for operating the microdisplay system as a liquid crystal display of a

normally white mode. Wood teaches a data processing system means *(figure 4, 110)* generating

temperature-dependent reference voltages *(output of 406)* most suitable for a temperature-

dependent measurement signal *(output of 408)* for operating the micodisplay system *(figure 2,

112)* as a liquid crystal display of a normally white mode *(column 6, lines 8-11).* It would have

been obvious for a person of ordinary skill in the art at the time the invention was made to use

the data processing system of a normally white mode, as taught by Wood to the thermal control

management system of Lippmann for the purpose of controlling the voltage applied to the

common electrode according to factors that affect the voltage across the liquid crystal layer,

dynamically adjusting the common electrode voltage according to the common electrode voltage

according to the current maximum and minimum display circuit voltages, and to compensate for

variations in the capacitance of the liquid crystal layer caused by temperature fluctuations

(column 2, lines 46-51 and lines 54-56).

With respect to **Claim 12**, Lippmann does not mention a data processing means

generating temperature-dependent reference voltages most suitable for a temperature

measurement signal for operating the microdisplay system as a liquid crystal display of a

normally black mode. Wood teaches a data processing means *(figure 4, 110)* generating

temperature-dependent reference voltages *(output of 406)* most suitable for a temperature

measurement signal *(figure 2, 112)* for operating the microdisplay system *(figure 2, 112)* as a

liquid crystal display of a normally black mode *(column 6, lines 11-16).* It would have been

obvious for a person of ordinary skill in the art at the time the invention was made to use the data

processing system of a normally black mode, as taught by Wood to the thermal control

management system of Lippmann for the purpose of controlling the voltage applied to the

common electrode according to factors that affect the voltage across the liquid crystal layer,

dynamically adjusting the common electrode voltage according to the common electrode voltage

according to the current maximum and minimum display circuit voltages, and to compensate for

variations in the capacitance of the liquid crystal layer caused by temperature fluctuations

(column 2, lines 46-51 and lines 54-56).

11.   **Claim 13** is rejected under 35 U.S.C. 103(a) as being unpatentable over Lippmann in

view of Waterman et al. (Patent No.: 6,744,415).

With respect to **Claim 13**, Lippmann does not mention the DAC as a resistor digital to

analog converter (RDAC). Waterman teaches the DAC as a resistor digital to analog converter

(column 7, lines 3-5; the RDAC is equivalent to a DAC according to the R-2R principle). It

would have been obvious for a person of ordinary skill in the art at the time the invention was

made to use a resistor digital to analog converter, as taught by Waterman to the thermal control

management system of Lippmann for the purpose of obtaining an ideal integration because the

resistor network can be realized very precisely using the matching principle *(column 7, lines 10-*

12), providing a control voltage for driving the liquid crystal display *(column 2, lines 26-27)* and,

providing optimum resolution within a voltage range in which most of the gray changes on the

LCD occur *(column 2, lines 36-37)*.

12.   **Claim 17** is rejected under 35 U.S.C. 103(a) as being unpatentable over Yasue as applied

to claim 14 above, and further in view of Lippmann.

With respect to **Claim 17**, Yasue does not teach the data processing means to further

include DAC output circuits for outputting the temperature dependent reference voltages.

Lippmann teaches the data processing means to further include a DAC output circuit for

outputting temperature dependent reference voltages *(column 4, lines 28-29 and lines 49-55)*. It

would have been obvious for a person of ordinary skill in the art at the time the invention was

made to include a DAC output circuit for outputting the temperature dependent reference

voltages, as taught by Lippmann, to the data processing means of Yasue for the purpose of

effectively monitoring the temperature of the LCD cell without significantly contributing heat to

the cell and to produce the LCD operating voltage *(column 6, lines 1-7)*.
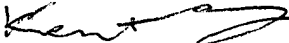

Conclusion

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Donna V. Lui whose telephone number is (571) 272-4920. The

examiner can normally be reached on Monday through Friday 8:30 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Sumati Lefkowitz can be reached on (571) 272-3638. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Donna V Lui
Examiner
Art Unit 2675

KENT CHANG
PRIMARY EXAMINER